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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,414	02/14/2001	Christos Karamanolis	10008123	4694

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HEWLETT-PACKARD COMPANY
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EXAMINER

YUSSUF, SAJID

ART UNIT	PAPER NUMBER
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2141

DATE MAILED: 06/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

27

Office Action Summary

Application No.

09/783,414

Applicant(s)

KARAMANOLIS ET AL.

Examiner

Sajid A Yussuf

Art Unit

2141

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

2. Claim 2 objected to because of the following informalities:
 - a. As per claim 2 Line 5 the phrase "in the one, " as per Examiner's recommendation the "the" should be omitted.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. ***Claim(s) 1-3, 4, 6-9, 11, 12, 14, 15, 17, 18, 20, 21 is/are rejected under 35 U.S.C. 102(e) as being anticipated by Sunkara et al. (US Patent No. 6,523,032 and Sunkara hereinafter).***

6. As per claim(s) 1 Sunkara discloses distinguishing between read requests and write requests from the client applications; transmitting read requests from the client applications to the plurality of read servers; transmitting write requests from the client applications to the write server; reading file data by the read servers and returning the file data to the client applications in response to read requests; and writing data by the write server in response to write requests from the client applications, (See Column 2 Lines 1-53).

7. As per claim(s) 2 Sunkara teaches the claimed invention as described in claim(s) 1 above and furthermore discloses writing the replacement data element to a new location in the one of the storage elements while leaving the current data element accessible for read requests processed by the read servers; locking a file meta-data element that references the current storage location; updating the file meta-data element to reference the new location having the replacement data element; and unlocking the file meta-data element after updating, (See Column 6 Lines 7-23).

8. As per claim(s) 3 Sunkara teaches the claimed invention as described in claim(s) 1-2 above and furthermore discloses allocating a new storage area at the new location prior to writing the replacement data; deallocating an old storage area at the current storage location while the file meta-data element is locked; wherein disclosed writing to a medium in response to a request as claimed, allocation/deallocation is inherent in a system with writing to any storage media, (See Column 6 Lines 7-23).

9. As per claim(s) 4 Sunkara teaches the claimed invention as described in claim(s) 1-3 above and furthermore discloses balancing between the read servers a processing load associated with the read requests, (See Column 2 Lines 53-64).

10. As per claim(s) 6 Sunkara teaches the claimed invention as described in claim(s) 1-5 above and furthermore discloses transmitting read and write requests to the read servers; and

transmitting write requests received at the read servers to the write servers, (See Column 5 Lines 23-31).

11. As per claim(s) 7 Sunkara discloses a plurality of read servers coupled to the client applications and to the distributed file system, each read server configured to read tile data from the distributed file system and return the file data to the client applications in response to read requests from the client applications; a write server coupled to the client applications and to the distributed file system, the write server configured to write data to the distributed file system in response to write requests from the client applications; means for distinguishing between read requests and write requests and transmitting read requests from the client applications to the plurality of read servers and transmitting write requests from the client applications to the write server, (See Column 4 Lines 9-67 & Column 5 Lines 1-31).

12. As per claim(s) 8 Sunkara teaches the claimed invention as described in claim(s) 7 above and furthermore discloses a data consistency control module hosted on the write server, the control module configured and arranged to write the replacement data element to a new location in the one of the storage elements while leaving the current data element accessible to read requests processed by the read servers, lock a file meta-data element that references the current storage location while updating the file meta-data element to reference the new location having the replacement data element, and unlock the file meta-data element after updating, (See Column 6 Lines 7-23).

13. As per claim(s) 9 Sunkara teaches the claimed invention as described in claim(s) 7-8 above and furthermore discloses a means for balancing between the read servers a processing load associated with the read requests, (See Column 2 Lines 53-64).

14. As per claim(s) 11 Sunkara discloses a plurality of read servers coupled to the client applications and to the distributed file system, each read server configured to read file data from the distributed file system and return the file data to the client applications in response to read requests

from the client applications and configured to transmit write requests to a write server; the write server coupled to the client applications and to the distributed file system, the write server configured to write data to the distributed file system in response to write requests from the client applications; a load balancer coupled to the client applications and to the plurality of read servers, the load balancer configured and arranged to selectively transmit read requests and write requests from the client applications to the plurality of read servers as a function of respective levels of processing loads of the read servers, wherein each of the read servers is further configured and arranged to distinguish between read requests and write requests and transmit write requests to the write server, (See Column 4 Lines 9-67 & Column 5 Lines 1-31).

15. As per claim(s) 12 Sunkara teaches the claimed invention as described in claim(s) 11 above and furthermore discloses a data consistency control module hosted on the write server, the control module configured and arranged to write the replacement data element to a new location in the one of the storage elements while leaving the current data element accessible to read requests processed by the read servers, lock a file meta-data element that references the current storage location while updating the file meta-data element to reference the new location having the replacement data element, and unlock the file meta-data element after updating, (See Column 6 Lines 7-23).

16. As per claim(s) 14 Sunkara discloses a plurality of read servers coupled to the client applications and to the distributed file system, each read server configured to read file data from the distributed file system and return the file data to the client applications in response to read requests from the client applications and configured to transmit write requests to a write server; the write server coupled to the client applications and to the distributed file system, the write server configured to write data to the distributed file system in response to write requests from the client applications; a load balancer coupled to the client applications, to the plurality of read servers, and to the write server, the load balancer configured and arranged to distinguish between read requests and write requests and selectively transmit read requests from the client applications to the plurality of read servers as a function of respective levels of processing loads of the read servers and

configured and arranged to transmit write requests to the write server, (See Column 4 Lines 9-67 & Column 5 Lines 1-31).

17. As per claim(s) 15 Sunkara teaches the claimed invention as described in claim(s) 14 above and furthermore discloses a data consistency control module hosted on the write server, the control module configured and arranged to write the replacement data element to a new location in the one of the storage elements while leaving the current data element accessible to read requests processed by the read servers, lock a file meta-data element that references the current storage location while updating the file meta-data element to reference the new location having the replacement data element, and unlock the file meta-data element after updating, (See Column 6 Lines 7-23).

18. As per claim(s) 17 Sunkara discloses a plurality of read servers coupled to the client applications and to the distributed file system, each read server configured to read file data from the distributed file system and return the file data to the client applications in response to read requests from the client applications and configured to transmit write requests to a write server; the write server coupled to the client applications and to the distributed file system, the write server configured to write data to the distributed file system in response to write requests from the client applications; a plurality of load balancers, each load balancer coupled to a respective one of the client applications, to the plurality of read servers, and to the write server, each load balancer configured and arranged to distinguish between read requests and write requests and selectively transmit read requests from a coupled client application to the plurality of read servers as a function of respective levels of processing loads of the read servers and configured and arranged to transmit write requests to the write server, (See Column 4 Lines 9-67 & Column 5 Lines 1-31).

19. As per claim(s) 18 Sunkara teaches the claimed invention as described in claim(s) 17 above and furthermore discloses a data consistency control module hosted on the write server, the control module configured and arranged to write the replacement data element to a new location in the one of the storage elements while leaving the current data element accessible to read requests processed

by the read servers, lock a file meta-data element that references the current storage location while updating the file meta-data element to reference the new location having the replacement data element, and unlock the file meta-data element after updating, (See Column 6 Lines 7-23).

20. As per claim(s) 20 Sunkara discloses a plurality of read servers coupled to the client applications and to the distributed file system, each read server configured to read file data from the distributed file system and return the file data to the client applications in response to read requests from the client applications and configured to transmit write requests to a write server; a write server coupled to the client applications and to the distributed file system, the write server configured to write data to the distributed file system in response to write requests from the client applications; a plurality of load balancers, each load balancer coupled to the plurality of read servers, each load balancer configured and arranged to selectively transmit read requests and write requests from client applications to the plurality of read servers as a function of respective levels of processing loads of the read servers, wherein each of the read servers is further configured and arranged to distinguish between read requests and write requests and transmit write requests to the write server, (See Column 4 Lines 9-67 & Column 5 Lines 1-31).

21. As per claim(s) 21 Sunkara teaches the claimed invention as described in claim(s) 20 above and furthermore discloses a data consistency control module hosted on the write server, the control module configured and arranged to write the replacement data element to a new location in the one of the storage elements while leaving the current data element accessible to read requests processed by the read servers, lock a file meta-data element that references the current storage location while updating the file meta-data element to reference the new location having the replacement data element, and unlock the file meta-data element after updating, (See Column 6 Lines 7-23).

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

23. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

- b. Determining the scope and contents of the prior art.
- c. Ascertaining the differences between the prior art and the claims at issue.
- d. Resolving the level of ordinary skill in the pertinent art.
- e. Considering objective evidence present in the application indicating obviousness or nonobviousness.

25. Claims 5, 10, 13, 16, 19, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sunkara et al. (US Patent No. 6,523,032 and Sunkara hereinafter) in view of Kazar et al. (IBM Technical Disclosure Bulletin No. NN9204146 and Kazar hereinafter).

26. As per claims 5, 10, 13, 16, 19, 22 Sunkara discloses the claimed invention as described above.

However, Sunkara does not explicitly teach a means for distributing read requests to the read servers in a round-robin distribution.

Kazar teaches a means for distributing read requests to the read servers in a round-robin distribution, (See Kazar Page 2 & 3 Paragraphs 2-4).

Therefore it would have been obvious to a person having ordinary skill in the art at the time of Applicant's invention to modify the teaching of Sunkara with the teachings of Kazar to include a means for distributing read requests to the read servers in a round-robin distribution with the motivation to provide for a policy that balances the load without incurring a large overhead, (See Kazar Page 2 Paragraph 2).

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

f. Hirabayashi et al. (US Patent No. 6,549,936) discloses method and system for transferring a job between two computers submitted as a request containing a plurality of scripts to be executed;

g. Anderson et al. (US Patent No. 6,047,356) discloses method of dynamically allocating network node memory's partitions for caching distributed files; and


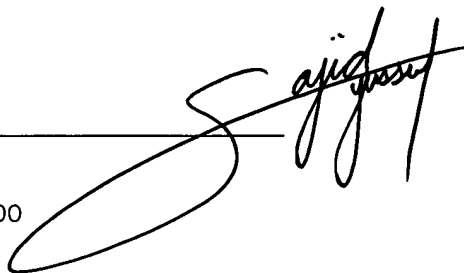
h. Vahalia et al. (US Patent No. 5,893,140) discloses a file server having a file system cache and protocol for truly safe asynchronous writes.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sajid A Yussuf whose telephone number is (703) 305-8752. The examiner can normally be reached on Monday-Thursday 7:30-5:00 PM and Alternate Fridays.

29. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on (703) 305-4003. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

30. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Sajid Yussuf
Patent Examiner
Technology center 2100
8 June 2004



RUPAL DHARIA
SUPERVISORY PATENT EXAMINER